United States Department of Agriculture
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Reply to: 3430 Evaluation

Date: June 21, 1984

Subject: Biological Evaluation of Windthrow in Esperanza Sale, Unit 201, Report No. 84-25

To: Forest Supervisor, Shasta-Trinity National Forests

On June 14, 1984 Gregg DeNitto, Pathologist on the Forest Pest Management Staff, visited the Esperanza Sale, Unit 201 with Bill Branham and Bob Austin from the McCloud Ranger District. In part of the sale area some predominant ponderosa pines were windthrown during the past winter. The possible presence of root disease, specifically Fomes annosus, concerned District personnel who requested a field evaluation of the damage.

All of the windthrown trees were predominant ponderosa pines. Some similar pines had varying degrees of lean. A number of older incense-cedars also were leaning. Examination of the base of windthrown trees showed that the trees had broken off 3 to 4 feet below ground level and had "popped out" of the ground. The below ground portion of the tree that had come out of the ground had no lateral roots. The wood at the point of breakage was sound and had no indication of decay. There were pitch pockets in the base of some of the trees. The below ground portion of the tree, that is now exposed, was generally deformed and did not form a cylinder. Instead of tapering out to the lateral roots, there was a slight taper inward with the largest circumference at the ground line and the narrowest portion 3 to 4 feet below ground.

There were no indications of root disease involved in the windthrow. This is based on the sound wood in the windthrown trees, the absence of any root disease symptoms in the area, and the fact that pines infected by F. annosus usually are killed by bark beetles before any substantial decay occurs.

The cause of windthrow appears to be a result of environmental factors. About 60 years ago the area experienced a series of mud flows that deposited 3 to 4 feet of new soil above the root systems of the existing vegetation. Over the years this has constricted and modified the normal growth patterns at the base of the residual trees causing structural weaknesses to develop. During the past 2 years precipitation levels have been much higher than normal resulting in soil saturation. High winds were experienced in the area this past winter. These winds blew over the tops of the canopy and caught the exposed crowns of the predominant trees causing them to rock in the saturated soil and break below ground along the weak planes that had developed. As the predominant trees left the canopy, openings were created exposing additional trees to winds previously not experienced causing some of them to windthrow also.

Similar events may occur in future years depending on soil and wind conditions. Some standing trees have indications that they have been rocking in the past. Openings in the canopy will expose additional trees to winds previously not experienced. Harvesting windthrown and susceptible trees is the only measure, short of removing all trees older than 50 years and regenerating where necessary, that will reduce the occurence of this situation in the future.

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